GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

Office: Tribune Building, New York.

Conducted by . . . . . Professor C. S. Sargent.

ENTERED AS SECOND-CLASS MATTER AT THE POST-OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, MARCH 25, 1896.

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John Bartram.

THE facts relating to the preservation of John Bartram's garden, detailed on another page of this issue, stand for an expression of civilization which is pregnant with possibilities. John Bartram was a Pennsylvania farmer, possessed of good understanding, remarkable powers of observation, uprightness of character, courage, a strong will and much industry. His love of plants showed him his field for doing good in the world, and made him a traveler and discoverer at a time when no other American was interested in botany. Through his friendship with Franklin he made the acquaintance of many of the most distinguished men of science in Europe, and his correspondence stimulated his activity and increased his usefulness. For many years in the eighteenth century John Bartram was the principal agent for the interchange of plants between North America and Europe, and to his efforts can be traced the introduction of many American trees into the gardens of Europe, and the planting in this country for the first time of several of the inhabitants of Old World forests. The first garden established in America for the study of plants was made by John Bartram; and his example led to the formation of the second American botanical garden, that of his cousin, Humphry Marshall, the author of the first book on American trees written by an American and published in America. John Bartram's reputation as a botanist, his admirable character and willingness to impart the information he had gathered in his long journeys, and the fame of his garden, made his home by the Schuylkill the Mecca of plant-lovers in America and gave scientific importance to Philadelphia.

John Bartram's garden, judged by the standard of our day, was a very humble one, and the plants which it contained are now all perfectly familiar to us, but, in his time, they were familiar to no one, and had been gathered slowly and laboriously at the cost of dangers and hardships which we cannot now even picture to ourselves. The city of Philadelphia might have selected within its boundaries some other site which would have been more desirable in location and natural features for a park, but in honoring the memory of John Bartram in this manner it has done something which is of far-reaching significance. As a people we preserve and sometimes even attempt to embellish places of historic interest, buildings which are famous on account of the events which have taken place within their walls, and objects which appeal to our patriotism—the old State House in Boston, Mount Vernon, the headquarters of Washington at Newburg, the Liberty Bell and battlefields of the War of Secession; but this is the first time in this country that the memory of a man who served his country by going into the forest and gathering trees and seeds and making them grow, and then sharing his discoveries with others, has been honored with a memorial like this, which will keep Bartram's virtues and his services in the minds of men as long as Philadelphia continues to be a city.

This Bartram memorial seems to us to mean a great deal, to be full of hopefulness for the future of this country; to mean that the whole science of rural life and the love of fields and forests is really to be a part of our national life. And, if this is true, it is the evidence that men and women are going to turn to the soil for rest and recreation; that the love of Nature and of growing things, which the Bartram memorial stands for, will gradually so enlarge and broaden us that life in this country will be fuller and better and more beautiful than it has been in the past; that public sentiment, stimulated by the love and knowledge of Nature, will make it possible to preserve our forests from ruin, to maintain urban parks safe from the inroads of greed and ignorance, to prevent the destruction of beautiful scenery, and to make this wide land fruitful and attractive for all time. John Bartram served his country well in his own generation, but his life in the influence it can now be made to exert has a power for usefulness which neither he nor any of his generation could have imagined.

Last week we spoke of certain dangers which threatened the forest reservations in the wild mountain regions of the west, but it would be a mistake to suppose that land which is set apart for public use in the older-settled portions of the country is any more safe than it is in Oregon. A plan is now on foot to take the Niagara Reservation out of the control of the Board which has managed it so wisely, and the meaning of this seems to be that certain capitalists are anxious to obtain franchises so that they can speculate on the Falls as a water-power. Even if the people were suffering because this mighty force was running to waste, that would be no reason for giving it away to any private corporation. But, so far as we can see, there is no mechanical or material necessity for destroying the grandeur and sublimity of the great cataract which is recognized as one of the wonders of the world. Its uplifting influence on the minds and imaginations of thousands of visitors certainly ought to count for something. A spectacle which enlarges and educates the mind, and opens it to noble thoughts, may be as truly a potent force in a civilized community as the electricity which the plunging river may be made to generate. We apprehend that the enlightened people of the state and of the country would feel the obliteration of Niagara as a distinct and personal loss, even if every ounce of its force were utilized to run some machine to provide for man's material wants. A community which erects immense advertising boards, to shut out or mar some refreshing prospect, and allows objects of great natural beauty to be desecrated, is plainly on the road to savagery. It certainly is no evidence of thrift or progress in its highest sense that we are willing to sacrifice all the higher emotions of our nature for purely material results. It is not an evidence of civilization that we permit the banks of our great rivers to be scarred by cuts and fills in constructing railroads, when they could have been built equally well without such an offensive exhibition. It ought to be a matter of more than local concern that the rugged battlements of the Palisades are being blasted down for paving blocks and building stones. And yet a member of Con-

gress or of the State Legislature hesitates before he introduces or votes for a bill which is simply to protect natural scenery for his own sake. He seems so fearful of being sneered at as sentimental or unpractical, that he is compelled to manufacture some excuse for doing what is plainly dictated by enlightened public policy. Before any provision can be made for protecting the Palisades, Congressmen have to be assured that they have a military or strategic importance, which, no doubt, is true. It ought to be enough for the country to know that this wall of rock is the most dignified natural spectacle near the chief maritime city of the continent. A people, entrusted with a possession like this, deserve to be stigmatized as vandals if they do not transmit it unimpaired as a secure inheritance to their children.

It cost years of effort to wake the people up to the point of organizing some protection for Niagara; certainly there ought to be enough public virtue left in the state to restrain the Legislature from facing about to undo one of the best pieces of work ever accomplished.

Fig. 13.—John Bartram's House—east front.

Bartram's Garden To-day.

THE near approach of the two hundredth anniversary of John Bartram's birth should arouse a widespread interest in the work now in progress at his Garden, under the auspices of the University of Pennsylvania.

John Bartram was born at Darby, Pennsylvania, on March 23d, 1699; he received his early education in that vicinity, where his body now lies. He was twice married, and it was about the time of his second marriage, in 1728, that he bought land on the west bank of the Schuylkill and built the main portion of his house (see pp. 122 and 123), and it is the second wife's name that appears on the panel in the south gable, "John and Ann Bartram, 1731."

The land lay along a beautiful reach of the Schuylkill, between Gray's Ferry and Point Breeze; the greater portion was rolling, other portions were marshy, but Bartram irrigated, drained and improved these swampy reaches, adding more land, until he possessed upward of six hundred acres. After his death this was divided and subdivided, but throughout all changes and divisions the greater portion of the Garden remained intact, and was owned by those who were either attached to it, or interested in it, so that in its life of more than a century and a half it has suffered less change than any other portion of the estate.

The original Garden comprised about five acres, beginning on the higher ground, a short distance west of the house, and extended beyond it toward the river. All of this land is included in the tract of about twelve acres, purchased some five years ago from the Eastwick estate by the city of Philadelphia. The city now owns, but has not yet taken possession of, land adjoining on the north, and it hopes shortly to acquire more of the Eastwick property adjoining on the south. The acquisition of the Bartram property, through the instrumentality of Mr. Thomas Meehan, the press, and the generosity of public-spirited persons throughout the country, is generally known. From time to time articles have appeared in the Philadelphia papers reflecting on the management. Many of these displayed a complete misunderstanding of the character of the place and its requirements, and most of them an ignorance of

affairs, legal and financial, which needed consideration. It has seemed curious that in Philadelphia so little general interest has been shown in this unique place, for there are some repairs which should have been made earlier if means had been available. But, on the whole, delay has not been a misfortune, for it has given those best fitted for the work time and opportunity to formulate plans whose value will become apparent with time.

Suggestions for "beautifying" have been made, the very thing to avoid, for it would destroy the air of antiquity which pervades the place, and which even the suburban squalor apparent in some portions cannot destroy. One enthusiast on the subject of beautifying shed abroad some quaint and curious botanical information. After stating that "the wild growth of underbrush has choked the rare shrubs that still survive, and none of these plants is still labeled so that the visitor may identify them," went on to describe one of the trees (Mossy Cup Oak, Quercus macrocarpa) as "a huge and spreading Oak which bears acorns with a fringed cup, the like of which no one to-day has ever seen, and whose original habitat is unknown." Besides this, there were "varieties of the British Æsculus, American Horse-chestnut, Buckeye, Cottonwood, and several supposed to belong to the tropics, such as the Magnolia, Cypress and Chinquapin Oak." Glib ignorance of this sort will, it is hoped, be dispelled by the educational work, admirably planned by the University authorities, to follow their present practical work of retracing paths and boundaries, removing dead wood, giving crowded specimens light and air, repairing broken stonework, filling in washed-out places, and, so far as present conditions permit, of restoring the house and grounds to original conditions. In labeling specimens the historic ones will have brief histories attached, in addition to botanical and popular names. Apart from association, the buildings are well worthy of preservation as examples of the constructive methods of the first half of the eighteenth century. They stand about midway in the grounds, where the higher portion ends and the slope to the Schuylkill begins, and are reached, as in Bartram's time, by a private lane that runs in from Darby Road, and which is bordered by forest trees, among them some beautiful Willow Oaks.

The lane skirts the upper part of the orchard, where

Fig 14.—John Bartram's House—west front.

Bartram experimented successfully with irrigation. Near a group of White Pines a diverging path runs diagonally from the lane across the orchard, past a fine Yew, and on to the west entrance to the house, where lane and path meet again at the doorway, after having passed through the oldest part of the Garden. Near the house they cross a railroad cut (really a picturesque feature, its rocky walls curtained with herbaceous plants and vines) that marks the site of the old kitchen garden; between this and the house was the flower garden, and portions of the beds are yet outlined by Box borders that were planted about fifty years ago.

The path is, perhaps, rather more attractive than the lane, but those who know their "Letters" will follow the lane. From its entrance into the grounds, across the bridge, past the barns and to the house-door it is like turning the pages of the earlier Collinson letters. First come the "narrow-leaved Oaks" and "noble White Pines";

close by the bridge is "that curious tree from the Jerseys" (Hackberry, Celtis occidentalis); near the west door a "Sugar-tree" and Horse-chestnut; the latter, perhaps, the one that Bartram believed to have been the first to blossom in America.

The house is built of heavy gray stone blocks, mortar-covered on the older western part and on the gabled ends. The front, which is of a later date, is built of still heavier blocks, and shows some attempt at ornamentation in the stone window-frames and bases and capitals of the porch columns. Still later, Bartram placed over his study window the panel with its inscription—

Tis God alone Almyty Lord
The Holy One by me adored
John Bartram 1770.

That a great part of the house is the work of Bartram's own hands we know from that letter to Jared Eliot, where he describes his method of quarrying and working stone, and says: "I had been used to split rocks to make steps, door-sills, window-frames, pig and water troughs. I have split rocks seventeen feet long and built four houses of hewn stone, split out of the rock with my own hands."

The woodwork over the porch and stone and brick addition on the south were added in this century. The western doorway was the original entrance, and through it one steps down into the house. The rooms are, with one exception, small, and are floored with the original heavy oak boards. In one of the rooms a cupboard in the wall beside the chimney is shown as the place where Bartram kept his seeds. This is doubtful, when the great quantity he kept on hand is considered, and, in spite of the thickness of the wall, this cupboard must have been a rather warm place.

The little "study" is an indisputable fact; from it one can pass out to the enclosed porch, with its stone floor, and have a good view of the grounds in front. The Box-trees planted about the house are of such enormous size that they interfere with all views, yet one would not have them destroyed. Near the upper corner of the house is the "Thorn" sent by Collinson, and near the south end is the Pear-tree of which Collinson wrote to Bartram almost a century and a half ago, "It has been thy pleasure to wait, but mine to hear of the delicious pear raised from Lady Petre's seed; but she, dear good woman, is gone to rest."

From the house to the river the land falls gradually, but directly in front of the house is a terrace, with remains of a Box-border along its outer edge, where it is upheld by a dry stone retaining-wall, pierced by two narrow flights of steps. From the terrace, paths originally led by circuitous routes through the ground and down to the river; one of them ran near the greenhouse, whose lines are still visible, a short distance from a very beautiful Yellow-wood, Cladrastis lutea. Further down, this path runs near the great Cypress, Taxodium distichum (see p. 125), brought from Delaware by Bartram, and now nine feet in diameter. Later on this path joins one along the river-bank. It is on this river-path that one finds the curious cider-press cut by Bartram in an outcropping ledge; and at the present southern boundary of the grounds there is an effective group of Beeches growing on another ledge that juts into the river.

In the southern part of the grounds are the fine Magnolias; one of them, M. acuminata, undoubtedly that brought from "up Susquehanna," and discovered on Bartram's journey with Conrad Weiser to the Five Nations' Council (1743). Near by grows the "Rose Bay," as they first called the Rhododendron, and a noble Mossy-cup Oak, one of the finest trees on the place.

Not many years before his death, Bartram, probably in acknowledgment of the courtesy of a life-membership presented him by the trustees forty years earlier, gave the "Philadelphia Library Company" some of his most valuable books, several of them presentation copies from the authors; among these latter is the fine edition of Dillenius' *Historia Muscorum*, of which he says, "I take this work to be the completest of the kind that ever was wrote, for Solomon did not write of any plants lower than Hyssop, so we may conclude he knew as little of mosses as of America." It is the intention of those now in authority to collect, if possible, relics from their present owners and form a Bartram museum in one of the rooms of the house. As yet the precise lines upon which this will be formed are unknown, but a mere collection of relics will only be interesting to those who know something of Bartram's lifework. It is to be hoped that the collection will include copies of the "Letters" and the "Observations on the Inhabitants, Climate, Soil, Rivers, Productions (Animals and other matters worthy of notice) made by Mr. John Bartram in his travels from Pennsylvania to Onondago, Oswego and the Lake Ontario." Printed by J. Whiston and B. White, Fleet Street, 1751.

Then, if a collection of portraits (old engravings preferably) of Bartram's correspondents could be hung in one of the rooms, and a series of charts of his journeys arranged in chronological order, there would, no doubt, soon be an understanding and appreciation of the work of this remarkable man.

Of nearly forty correspondents, all were men of distinction in their time, and some of them for all time. His journeys began with botanical trips in his own neighborhood, grew in distance and wealth of observation, and culminated when he was nearly seventy, in the exploration of four hundred miles of the St. John's River, Florida. Out of his great but unfulfilled desire to explore the Mississippi Valley grew that idea of exploring the Missouri country, discussed immediately after the Revolutionary War, by Franklin, William Bartram and the Marshalls. This discussion and hope became almost a reality ten years afterward, when Dr. Wistar wrote to one of the Marshalls that "Mr. Jefferson and others are much interested . . . and think they can insure a thousand guineas to any one who undertakes the journey, and can bring satisfactory proof of having passed across to the South Sea. If thee can come to town and converse with Mr. Jefferson, I am confident no small matter will stop them."

Something happened, for ten years later, when the expedition started in 1803 that was to give us the Oregon country as proof of having reached the South Sea, we know it was led by Lewis and Clarke, but Jefferson's instructions to them read like extracts from Bartram's letters.

If some of this may be learned in the house where Bartram wrote and pondered it will lift the work of protection and restoration, now in progress, far above the plane of mere preservation of an historic place.

Ann Harbor, Mich. *M. L. Dock.*

Foreign Correspondence.

London Letter.

Pycnostachys urticifolia.—Flowering specimens of this beautiful Labiate plant have lately been received at Kew from a garden in Rotherham, where they were grown from seeds imported from south Africa. The plants grew to a height of three feet in a year under greenhouse treatment and produced terminal spikes of rich blue flowers, of the same shade as the flowers of Salvia patens. The species was first described and figured in *The Botanical Magazine* in 1863 (t. 5365), where it is said to have been raised and flowered by Messrs. Backhouse, of York, from seeds sent by Dr. Livingstone, who collected it on Mount Zomba, near Lake Nyassa. It flowered with Messrs. Backhouse in January. It is well worthy of cultivation, and would probably thrive out-of-doors in summer. The genus is allied to Plectranthus and Coleus. Pycnostachys urticifolia has nettle-like green leaves, and the flower-spikes are from four to six inches long. Sir William Hooker anticipated for it great favor as a garden-plant, but it appears to have gone out of cultivation. Its reintroduction from Livingstone's country is therefore satisfactory.

Pentapterygium serpens.—This is a Himalayan ally of

Vaccinium which has been cultivated at Kew for the last fifteen years and has flowered every year in a greenhouse about this time of year (March). It is a beautiful plant; the arching stems, rising from a woody root-stock to a length of five feet, are partly clothed with shining, green, myrtle-like leaves and fringed for nearly their whole length with pendent tubular flowers an inch long and colored blood-red, with darker V-shaped lines. The flowers remain fresh upon the stems for about two months. Such a specimen as this at Kew takes about twenty years to grow, but, once acquired, it is a most valuable plant for the conservatory, practically looking after itself if only a little water be given to it now and then, and when it comes into flower it is universally admired. It can be multiplied from cuttings of the young branches. Mr. Elwes, who collected this plant in the Himalayas, found it growing upon trees with Cœlogynes, etc.

Weldenia candida.—I noted this plant in 1894, soon after its introduction to Kew from Guatemala, where it occurs only on the crater of the Volcan de Agua. Since then it has improved under cultivation, and it has been in flower in a cold house along with Cape Heaths all winter. The stems, which are about nine inches long, are formed of the closely folded bases of the leaves, as in a Crinum, the leaf-blades forming a spreading rosette about eight inches in diameter. The flowers are developed two or three at a time from a central capitulum, each flower having a tube two inches long and a spreading limb of three ovate concave segments about an inch across; they are of the purest white, with a cluster of pale yellow anthers. The root-stock is fleshy, and during the autumn the plants are allowed to rest for about two months. The genus is monotypic and is allied to Tradescantia. It is propagated by division of the root-stock.

Fig. 15.—Bald Cypress, Taxodium distichum, in Bartram's Garden.—See page 124.

Hybrid Rocheas.—Rochea jasminea and R. coccinea are two well-known greenhouse plants, the former, with short crowded stems bearing small heads of erect, tubular, white jasmine-like flowers; the latter, often called Kalosanthes, with taller thicker stems and larger clusters of bright red flowers. These two were crossed a few years ago by a Belgian horticulturist, and the progeny were distributed by Monsieur Pynaert, of Ghent. They are now popular with some of the growers for market near London, large numbers of them being grown in the convenient "forty-eight" pot, and sold for about a shilling each when in flower. They form dense tufts of stems about nine inches high, each bearing an erect umbel of white, carmine, rose and bright red flowers. They bloom in early summer. No plants are more easily grown, a light frame or greenhouse, such as suits a Pelargonium, an open soil, plenty of water during the growing season and frequent stopping of the stems in the early stages being the chief of their requirements.

Tecoma Smithii is still flowering freely here, so that plants have been in flower now for the past four months. They are single-stemmed plants, two feet high, clothed from base to top with healthy pinnate leaves and bearing at the apex a beautiful cluster of from twenty to fifty flowers, which are rich yellow, faintly tinged with red on the outside of the corolla. This is a greenhouse plant for the million. It can be grown as easily as Chrysanthemums, and it never fails to flower if the following directions are observed: (1) Cuttings to be struck in early spring in heat; (2) the plants must be limited to a single stem, all laterals to be removed as soon as they start; (3) when the buds show at the apex lateral shoots will push near the top, which must be removed, or they will prevent the buds from developing; (4) the plants should be kept in a cool airy house or frame from October till the flowers are over.

Daphne Indica.—This is one of the choicest of greenhouse plants when it is successfully cultivated, but it has fallen into neglect because of its miffiness. I believe this is due entirely to the fact that the plants supplied by nurserymen hitherto were grafted and not grown on their own roots, Daphne Mezereum or D. Pontica being used as stocks. Messrs. Low & Co. have, however, discovered that cuttings of D. Indica will strike root readily if planted in small pots in a hot frame in early spring, and that plants thus rooted grow freely and flower profusely. A few plants of this Daphne placed about in conservatories when in flower give off a most pleasing odor. I have seen good specimens grown by setting the plants in a rich border in a sunny position in a conservatory. Several plants have survived the past three winters against a warm south wall out-of-doors at Kew. The species is a native of Japan.

Primula imperialis, the Royal Primrose from the high mountains of Java, continues to thrive here in a cool house or frame. It is apparently a biennial, seedlings flowering when two years old and then perishing. Plants have been tried in various sheltered positions out-of-doors at Kew, but they have always succumbed to the first severe frost. In Cornwall, however, it can be grown out-of-doors permanently, for plants have lived in a garden at St. Austell for two winters, and the winter of 1894-5 was a record one. I believe this plant would sport freely and produce variety in color and size in places where the conditions were exceptionally favorable to its growth. It has, no doubt, considerable capabilities if placed in the hands of a clever breeder favorably situated. A Primula with a rosette of leaves nearly two feet across and erect spikes three feet or more high, bearing whorls of deep yellow flowers like those of P. Japonica, is essentially a plant to be looked after.

Persian Cyclamen.—Growers of this plant in England have lately proved that although German growers are successful, English are even more so. Exhibits from some of our leading metropolitan cultivators of the Cyclamen were lately pitted against plants from the best of the German growers, and the English plants were better, both as to quality of strain and cultural excellence. I have lately seen establishments where from ten to twenty thousand plants of this Cyclamen are raised annually. The seeds are sown in September and the seedlings are treated as stove plants till about the following June. By the end of the year they are bouquets a foot through of healthy leaves and from twenty to fifty expanded flowers. Two-year-old plants have been grown near Kew which measured twenty-six inches in diameter and bore a hundred and fifty expanded flowers; all this, too, in an eight-inch pot. Great improvement in the size and color of the flowers has been made in the last few years; a rich blood-crimson break being very much favored now.

Senecio Bourgæi.—This is a handsome winter-flowering greenhouse plant, a near ally of Senecio cruenta, the parent of the garden Cineraria, and a native of the same country—that is, the Canary Islands. Plants of it have been in flower for the past month at Kew; they are about a yard high, the leaves are pale green, the under surface clothed with soft white wool, and the petioles bear ear-like lobes, as if the leaf had attempted to be pinnatifid. The flowers are larger than those of S. cruenta and of a rich purple color. It is probably an annual. Breeders of Cinerarias may find it useful. A figure of it was published in *The Botanical Magazine* in 1853 (t. 4994) under the name of Doronicum, and it is there spoken very highly of as an ornamental greenhouse plant. We are indebted to the Cambridge Botanic Gardens for its introduction.

London. *W. Watson.*

Plant Notes.

Cercidiphyllum Japonicum.—We have lately received a photograph of one of these trees growing on the grounds of a correspondent on the banks of the Hudson, which represents a specimen some twenty-five feet high and of perfectly conical shape. The tree at this stage of its growth is certainly beautiful, and as it seems to be perfectly hardy and not subject, so far as observed in this country, to any serious disease, there is no reason why it should not take high rank among our ornamental trees. In Japan it becomes a large tree, and in moist, deep, rich soil it often attains a height of a hundred feet. Sometimes it grows with a single stem three or more feet in diameter and rising fifty feet without branches, but usually a cluster of stems unite together at the base into a stout trunk and then diverge gradually. The photograph of a tree of this kind, with a trunk circumference of twenty-one and a half feet, was reproduced in vol. vi. of this journal, page 53. When young the tree is fastigiate, the branches hugging the trunk closely, with the apparent purpose of protecting it against the rays of the sun, which seem to injure it at early stages of its growth. At this early season the slender branches of the trees hereabout are plump with sap, the red-brown bark is bright, and the leaf-buds, apparently, are already beginning to swell. In fact, the Cercidiphyllum is among the first trees to show its leaves in spring. These are at first a bronzy red, with bright red stalks and narrow red stipules, and they present a striking appearance at this season. Neither the flowers nor fruit are conspicuous, but the foliage, which is abundant when the tree stands in rich soil, and rather thin in more sterile situations, is a dark green during summer and turns to a clear yellow in the autumn. The Cercidiphyllum is a valuable timber-tree in Japan, producing a wood which somewhat resembles that of the Liriodendron, to which it is closely allied, and the Ainos of Japan use it for canoes as the Indians of our own country once used the wood of the Tulip Poplar.

Mahernia verticillata.—This is a subshrub or woody perennial which has been cultivated for seventy-five years, and yet it is seen more rarely now than it was thirty or forty years ago. The bright yellow bell-shaped flowers are very pretty and abundant, and it used to be seen often drooping about vases and sometimes in hanging baskets, for it is not a compact upright grower, but rather spreads around in a straggling fashion. In Florida, where it flourishes out-of-

doors, in a single season it will creep over the ground so as to cover a space a yard across, and in a window at the north or in a cool conservatory it will bloom through the winter and spring, and it may also be flowered out-of-doors in the summer-time. After all, perhaps, the most interesting quality of this plant is its fragrance, the flowers being as sweet as Lilies-of-the-valley, so that, indeed, it takes rank with Boronia megastigma among the plants which are conspicuous for a distinct and pleasing odor.

Cultural Department.

Vegetable Notes.

THE weather experienced here during early and middle March has proved uncommonly severe, and the probabilities now are that the ground will not be in suitable condition for seed-sowing and planting until later than usual. We have taken advantage of recent severe weather, when there was no snow, to have manure carted or wheeled on all ground not dug in the fall. This work should on no account be left until the earth is soft, when the operation is both disagreeable and laborious. Pea-brush has recently been secured and pointed ready for use; also Bean-poles. These and other seemingly unimportant little duties performed now will materially lessen the strain when the busy season is in full swing.

Lettuces planted out in frames early in February are now well headed and ready for cutting. Plants set out in October gave us a constant supply until these came in. Later batches have recently been planted in a gentle hot-bed, while additional sowings are made fortnightly. We find no difficulty in having a constant supply of lettuce during all the winter. White-seeded Tennis Ball still proves the best all-round variety with us. A sowing of Radishes is made between the Lettuce rows. From February onward these are ready to pull before they interfere with the Lettuce. An early sowing of Carrots, of the French Horn variety, and Beets have recently been thinned out. We grow rows of Radishes between these crops, and they are ready to use before the Carrots and Beets are of much size. Our earliest batch of forcing Erfurt and Snowball Cauliflower are now in four-inch pots, and will be transferred to a gentle hot-bed about March 25th. A later sowing recently made will give us nice plants by the time they can safely be set outdoors in this latitude. Early Cabbage have just been pricked off in a frame. We have just made our first hot-bed for Cucumbers, having delayed it somewhat owing to the severe weather. This, and, indeed, all other vegetable frames, will need to be well matted up on cold nights, and careful attention must be given to watering and ventilation. This is a suitable time to make a sowing of Egg-plant and Peppers, and as greenhouse space is just now pretty well occupied, the seeds may be started in a Cucumber-frame. Parsley planted in frames last fall will now be making good growth; an occasional soaking with liquid-manure will improve it. Care should be taken at this season to use tepid water for all plants in frames. Soaking them with water of almost ice coldness drawn from a faucet outdoors chills the plants and checks growth.

Our earliest sowing of Celery is now almost large enough to prick off. We use equal portions of White Plume and Paris Golden for a first batch. We still have some good heads of Kalamazoo in the trenches outdoors, which will give us a supply until Easter. This winter has not been favorable for keeping Celery in the open, since there has been a succession of freezings, thawings and heavy precipitations. But we are more convinced than ever that it keeps best banked up where it is grown, while the flavor is vastly superior to the stored heads usually seen on the markets. Tomatoes for our main outdoor crop have just been sown. These make strong plants by the middle of May, which is quite as early as we can plant them out here with safety. An earlier batch has just been boxed off. These will be grown along and transferred to six-inch pots later in the season. By planting-out time they will have one or two bunches of fruit set on each plant, and under favorable conditions will give ripe fruit by the end of June or first week in July. The most satisfactory forcing kind we have grown this winter is Eclipse, a variety introduced by a Scotch firm of seed merchants two or three years ago. Plants in ten inch pots are carrying bunches with from six to ten fruits on each, averaging about a dozen bunches per pot. The fruit is uniform in size, fully as large as Chemin, but without the three-cornered appearance of that useful variety. Comrade, which we have grown a few pots of, gives some remarkably large bunches. Some have as many as fifteen fruits on, but the fruit is more irregular in form than Eclipse. May's Favorite is a good forcing variety and sets well after February. It proves much better than President Cleveland. Nicholson's Hybrid as an early-winter forcer is excellent; it lacks size, however, and compares unfavorably with some other kinds after this season. Our tallest batch of plants for indoor culture are now in four-inch pots; an earlier lot is ready to transfer to fruiting-pots, and will be grown where space will permit in our cooler divisions. Artificial pollination is now unnecessary. Giving the plants a shake about the middle of a bright day will distribute the pollen. Laterals and decaying foliage must be removed each week and sufficient foliage cut away to give the fruit all the sunlight possible. The plants require copious supplies of water, and we scatter a handful of sheep-manure or Bowker's fertilizer on each pot once a week, in addition to liquid stimulants. That this treatment is appreciated the network of roots on the surface of the pots testifies. Where Mushrooms are grown wood-lice are apt to prove rather troublesome. We find that by placing a small wisp of straw in a dry corner of the bed most of them will congregate there, and they can be easily destroyed with scalding water. If not looked after they will do untold mischief to the crop. We find that home-made spawn gives us better results than English Milltrack, and gives us mushrooms two weeks ahead of the imported spawn.

Onions produce so much finer bulbs under what is sometimes called the new culture, although in reality it is a very old practice which has been adopted for the production of specimen bulbs, that even market growers find it pays to adopt it. Our seed was sown in shallow boxes about February 20th on the shelf of a cool house. In a few days these will be transferred to a frame and gradually hardened off. All varieties are improved in quality by being raised in this way and pricked out; some kinds, such as Giant Rocca, Prizetaker and Silver King, more so than others. All who have not given this mode of culture a trial should do so.

Taunton, Mass. *W. N. Craig.*

Sensitive Oxalids.

THERE are at least four species of Oxalis in common cultivation the leaves of which are sensitive to the touch. They are O. (Biophytum) sensitiva, O. (Biophytum) dendroides, O. Ortgiesi and O. bupleurifolia. The two varieties of O. Biophytum are, of course, closely related, and in appearance are pretty nearly alike, the first being the more sensitive and preferable as an ornamental plant for the conservatory or window garden. The flowers are almost stemless and produced in the heart of the pretty rosettes of leaves which terminate the branches. The leaves are pinnate, with from twelve to twenty pairs of leaflets. On being touched these leaflets close downward until those on opposite sides of the leaf-stem touch each other, just the reverse way in which the common Sensitive-plant, Mimosa pudica, closes its leaves when interfered with. From some cause this plant sets seeds poorly with me; although I have grown the same specimen for over ten years, it has never yet reproduced itself from seed. The upper part of the leaf is bright green, the under side of a reddish hue. It is quite an interesting plant to have in a greenhouse, as it will close its leaves on the slightest provocation. O. dendroides takes alarm less easily, and sometimes, especially when it is grown cool, it scarcely closes its leaves at all when touched. The reproductive qualities of this species are such that when introduced into a greenhouse it is not long in permanently establishing itself; the seeds set very freely, and it would seem as if they all germinated, for they come up in every conceivable place where it is at all possible for a plant to live. It is especially at home in the pots of other plants, and so pretty is it when growing in this way that one grudges to pull them out. Its flowers are on long stalks clear of the leaves. The rosettes are arranged in the same way as in O. sensitiva, and they are green on both sides. The plant does not have the same branching habit as O. sensitiva; the flowers of both are pinkish white. O. Ortigiesi is a well-known plant in our greenhouses, the whole plant, excepting the flowers, having a brownish metallic hue to it. The flowers, which are borne on long stalks, are bright yellow in color. The leaves are trifoliate, and when disturbed droop downward. The stem is of a succulent nature, and young plants are easily raised from cuttings. O. bupleurifolia is a dwarf shrub; it has leaves unlike any of the other four; when the plant is in a young state or in poor health the leaves are not developed at all, but, instead, there are leaf-like formations called phyllodes, which, when the plant is strong, develop trifoliate leaves at the extremities. This species has yellow flowers in the axils of the phyllodes. It is propagated from cuttings, and, apart from its sensitive nature, it is of little horticultural value.

Botanic Garden, Washington, D. C. *G. W. O.*

Garden Annuals.

IT is now generally admitted that for the best and most continuous display of flowers during the whole of the summer season annual plants are essential. Perennials can be relied on for early flowers before tender annuals can be even planted out, and they will also furnish a late fall display after the advent of frost. The most approved practice, therefore, is to so combine the two that there be no intermission, and this is not difficult if a little care in selection and a little foresight in planting be exercised. We have this week made such sowings of the earliest annuals as may be deemed necessary, and at a later date, say at the end of this month, the general sowing of all such seeds as are planted each season will be made, and this will be found a good time if a hot-bed or a greenhouse be at hand to place them in after being sown. The old-time plan of sowing in a hot-bed is not to-day superseded. There is no better place to obtain the proper conditions that insure even germination and a sturdy aftergrowth than a hot-bed of moderate heat if an inch or two of earth be spread over the fermenting materials to prevent an excess of steam. This is also a good place for plunging the pots or pans, but a warm greenhouse is most generally used where it can be commanded, although it is not at all essential.

For the sowing of all seeds it is well to compound the soil in such a way that it will neither become hard on the surface so as to prevent the young cotyledons from pushing through, nor dry out too quickly. No mistake is more fatal to successful germination than allowing the soil to become dry just as the seeds are about to sprout, and to avoid this we set the pans or pots altogether in a warm place and cover them with paper until germination takes place, when they are taken out as fast as the cotyledons are well developed and set apart in a lighter position; this covering will prevent too rapid drying, will also tend to guard against extremes of temperature, and is altogether the best way to save labor in watering and get the best returns for work and care. Soil for seed-sowing must always be made light in texture as well as weight by the addition of plenty of leaf-mold, and if the compost from a spent mushroom-bed is available it is well to add at least one-third of this, sifting the whole well, and after the seeds are sown covering them with soil that has passed through a sieve with a mesh no coarser than one-eighth of an inch. A sprinkling of sand over the surface of the top will prove a good index as to state of the soil as to moisture, as it is then possible to see at a glance if water is needed. These little details may seem frivolous, but are in themselves the secret of success in getting good returns from seeds that are either slow to germinate or of weak vitality.

It may be well to name a few of the annuals that we have found to fill all the requirements for display in the garden and to be at the same time available to cut for house decoration; and it may be added here that if a plant does not produce flowers that are fit for this latter use it is hardly worth while to grow it. There are so many plants now that are good for both purposes that we have a sufficiently long list of these alone to choose from ordinarily. Zinnias we regard as indispensable to even the smallest garden; they have done more toward filling the place of the scarlet Geranium than all the other forces together; they are easily raised from seed, and give a profuse and abundant bloom for at least three months; we use the tall and dwarf strains—a double row, one of each, makes a fine effect in a long border, or if used in the mixed borders they may be planted in groups where other plants are likely to die down early in the season, as sometimes happens with early-blooming perennials, and they will cover the ground and give a bright effect just when it is most needed, during the early fall months. Good Asters are as essential as Zinnias, but we here also prefer the tall kinds with long stems, such as those known locally as Boston Market, for early use, and the new branching kinds which are admirable later. There are so many strains of Aster now on the lists that it is perplexing to know just which to select, but it is safe to add some each of the old standard kinds from the Pæony and Victoria sections, for example, as these are as good as any for a display, and they also have a good length of stem.

There has been an amazing improvement of recent years in the Antirrhinums, and seed of good strains will produce flowers that would hardly be recognized as the old-time Snapdragon. They are continuous bloomers from the time they begin until after frost, and may be even taken up and put in the greenhouse for a winter crop if kept from flowering for a few weeks before lifting, when they will give a spring crop of bloom that is most acceptable. The annual Scabious are good, too, for cutting, and give a great profusion of bloom; these may be sown outdoors when the soil is warm and will do best in this way, but a few started now will give earlier flowers.

The new Japanese Ipomœas are well worth a trial if a good strain is secured, but there are some that are inferior, and this has brought into bad repute a most interesting novelty among summer flowers, one of the best of its kind for a number of years. The flowers are of almost all shades of blue, purple, crimson, pink and many other intermediate shades, all of silkiest lustre; many of them, too, are double, and the foliage is in many cases beautifully marbled or mottled with silvery white, or golden bronze. These Morning Glories are perennials, but are better raised from seeds each year, unless some specially good variety is worth keeping over in the greenhouse. The seeds are hard-shelled and need to be scratched through the outer shell with a knife and put in water for a few hours till they swell, and if planted then they will germinate in a day or two. These plants are useful for fences, piazzas, arbors and any other place where a climber of quick growth is desired for the summer months.

The Celosias are worth trying; in fact, they have been successfully tried in some places as summer annuals in the border. We hope to make trial of them more extensively this year. Though they have generally been grown in pots, they will do much better in the open ground if strong when set out, and the season of bloom is so long as to make them specially valuable in the border. Care should be taken to save the weak seedlings, as these often carry the best plumes, the strong vigorous growers often making no plumes worth the name even in pots where root-room is restricted. Last summer I saw the new Nemesia strumosa splendidly in bloom in Mr. Chamberlain's garden, at Manchester, and when well grown, as these were, there are few annuals so showy for a sunny position. They have been somewhat disappointing here, but this was evidently due to a failure to understand all their necessities. The seed must be sown in pots to insure germination, they are so small.

In a dry, sandy, poor soil, which must sometimes be occupied, there are a few annuals that will do better than in richer compost; indeed, I have failed altogether to flower the scarlet Salvia in the ordinary border, where they never stopped to bloom, but kept on growing until frost cut them off. In dry positions, however, where the soil is poor, they will produce a blaze of color, and are not to be despised as cut bloom for house decoration. Petunias of the improved strains are also well adapted to such soil, where they grow rapidly and flower profusely, and a margin of Portulacca will complete a pretty effect in a spot not easy to make beautiful under other treatment. With Sweet Peas, as with Asters, it is a difficult matter to select the kinds to grow from such a long list, but, given the colors that are desired, they should be planted as soon as the frost is out of the ground and it is possible to work it conveniently. We do not like to plant in the same place year after year, but always take out the soil to the depth of at least eighteen inches, placing at the bottom of the trenches good manure, filling up to within six inches of the top and then sowing the peas. It is then possible to add a little more earth later on at staking-time, and still leave a trench to pour on water when it is needed. They are very thirsty in the flowering-time, and we leave the hose running in the trench all night, to their great delight. The annual sales of Sweet Pea seeds have come to be one of the most remarkable features of modern horticulture. They are grown by the ton in California, and no better samples are to be found. There is no excuse for foreign-grown seeds, and, indeed, we hear little of them now, compared with what we heard a few years ago. Even English novelties are now sent to California, where they are grown to secure stock for selling. The climate is well adapted to them, and their cultivation has been reduced to a profitable system. I find that other seeds grown in California as well as Sweet Peas are well acclimated, and thrive better here than those of European origin do.

South Lancaster, Mass. *E. O. Orpet.*

Physianthus albens.—This is a pretty climbing Asclepiadaceous plant from Brazil. The common name, White Bladder-flower, is simply a translation of its botanical name. Although an old plant, and once quite common, it was not until last summer that I chanced to see it, when I was at once attracted by the large number of cutworm moths which the flowers had entrapped. For this reason it was named the Cruel-plant by the late Dr. George Thurber, of Passaic, New Jersey, who thus describes the contrivance: "The anthers are so placed that their spreading cells form a series of notches in a ring around the pistil. The insect, in putting its proboscis down for the honey, must pass it into one of these notches, and in attempting to withdraw it the end is sure to get caught

in a notch, bootjack fashion, as it were, and the more the insect pulls the more its trunk is drawn toward the end of the notch. Thus caught, the insect starves to death." The plant is quite easily propagated from cuttings. The usual plan of cultivation is to trim plants in, which have been blooming all summer, and keep then rather dry during the winter in an ordinary greenhouse. It is very effective trained to a post or trellis.

Wellesley, Mass. *T. D. H.*

Correspondence.

Shrubs which Flower in Early Spring.

To the Editor of Garden and Forest:

Sir,—Will you be kind enough to give a list of shrubs which flower very early in the spring? I have a lawn with a warm and sunny exposure, and I should like to border it with a shrubbery which will make some sort of floral display before the great mass of spring-flowering shrubs are in bloom.

Bordentown, N. J. *R. A.*

[Perhaps Chimonanthus fragrans would survive the winter in our correspondent's latitude, though it is not reliably hardy much north of Washington. Its remarkably sweet-scented flowers appear very early. The long wands of Jasminum nudiflorum are covered with bright yellow flowers very early, also, but this, too, is doubtfully hardy except from Philadelphia southward. Corylopsis pauciflora, which was brought from Japan some years ago by Dr. Hall, is perfectly hardy. It belongs to the Witch Hazel family, and bears pale yellow flowers. C. spicata, a rarer shrub, is hardy in Philadelphia, and its flowers are more showy and interesting, of richer color and with an odor which reminds one of Violets. Fothergilla Gardeni, a native of our southern Appalachian region, is also a member of the Witch Hazel family, and, although it has been grown in English gardens for more than a century and a quarter, it is rarely seen in American gardens. It is perfectly hardy, and the flowers, which appear before the leaves at the end of all the branches, cover the plant with brush-like masses of long white stamens, which have a very curious and beautiful effect. It is a shrub of good habit all summer long. The old-fashioned Cornelian Cherry, Cornus mascula, with its abundant small yellow flowers, is a first-rate plant, and later in the season its cherry-like fruit is attractive. Daphne Mezereum, a stiff upright shrub with fragrant rose-colored flowers, should come in the list. Our native Andromeda floribunda, an exquisite shrub with evergreen leaves, and the Japanese Andromeda, a more spreading shrub with broader panicles of handsome white flowers, should both be planted. Two Chinese Bush Honeysuckles, Lonicera fragrantissima and L. Standishii, both display their odorous flowers before the leaves appear. The native Leather Wood, Dirca palustris, the Yellow Root, Xanthorrhiza, the fragrant Sumach, Rhus aromatica, all have inconspicuous flowers which appear very early, and the last two are useful for connecting the turf on the borders with the taller plants in the rear of the shrubbery. Some of the Currants, like Ribes saxatile, R. alpinum and the native R. aureum, have handsome and fragrant flowers. The little Heath, Erica carnea, rarely more than a foot high in this latitude, is very interesting in early spring on rockwork, and, of course, if there is a place for the Mayflower, Epigæa repens, this should not be neglected. Some of the bush Cherries, like Prunus tomentosa, P. Davidiana, and the Sweet Almond, P. Amygdalus, are very desirable, and they will be still in bloom when Spiræa Thunbergii opens its profusion of pure white flowers and the Forsythias are in the full splendor of their bloom. For full descriptions of all these shrubs and for figures of several of them we must refer to back volumes of Garden and Forest.

A place like one of the small openings in the Ramble of Central Park, if bordered with shrubs of this sort, might be made especially attractive. Into the border some of the Hazels and other plants with conspicuous catkins could be admitted, and behind the border would be a suitable place for early-flowering trees, among which the Swamp Maple and the Red Bud and tall shrubs, like our Spice Wood, could be made prominent. Shrubs, like Magnolia stellata, with very showy bloom, perhaps, might be discarded from a quiet nook like this, and even Forsythias might be too glowing in color. But, certainly, such a lawn would be most interesting just after winter has relaxed its hold. —Ed.]

Recent Publications.

The Spraying of Plants. By E. G. Lodeman, Instructor in Horticulture in Cornell University. With a preface by B. T. Galloway, Chief of the Division of Vegetable Pathology, United States Department of Agriculture. New York: Macmillan & Co.

The literature of horticulture must more and more from this time on fall into the hands of professional men and students. There is so much of science attached to the art of horticulture, so much detail, such an accumulation of experimental facts and methods, that it is now beyond the powers of the layman to digest and collate these stores. The coming literature may not be in all respects better than the old, but it will be different in type, and it will certainly gain in freedom of treatment and in the breadth of its mission, and it will be freer from provincialism and dogmatism and hereditary errors. Mr. Lodeman's book on spraying is a noteworthy illustration of the modern horticultural treatise. Ten years ago spraying against insects and fungi was practically unknown as an important, or as even an accredited, operation, and yet here is a volume of four hundred pages devoted to the subject. All the practice has been developed since Downing, Barry and Thomas and other authorities wrote or revised their books, and the special literature on the subject is now so extensive that only a specialist can master and classify it for use. Two hundred and thirty closely printed pages are given to the history and principles of spraying, in which the gradual advancement of our knowledge is set forth, together with the principles which underlie the practice. The remainder of the book is taken up with specific directions for the spraying of cultivated plants, with descriptions of the most important insects and fungous diseases affecting them and the method of treating each. Mr. Lodeman has gathered the results of an immense amount of experiments, both in Europe and America, and his book can be trusted, not only as a manual of practice, but as a true and well-classified record of our knowledge on this subject at the present time.

We have received the interesting *Hand List of Orchids Cultivated at Kew*, and find it a very useful little manual for all who have to deal with these plants. The brief preface contains many interesting historical facts in relation to the growth of the collection there, and the list comprises nearly two thousand species and garden hybrids. Wherever possible there is a reference made to a figure, and as the list is only printed on one side of the leaf there is abundant room for annotations. There are many collections where Orchids which bear the fashionable and popular flowers are more largely represented than they are at Kew, but this one is particularly strong in the so-called botanical Orchids, which are absolutely essential to the student who wishes to gain a complete knowledge of the family. Of course, dried specimens of the botanical Orchids can be had in herbaria, but a living plant is better for purposes of study than a dead one, and it is by an examination of living plants alone that we can observe the contrivances for cross-fertilization which so interested Darwin and many other naturalists.

Notes.

One of the most striking features in some of the florists' windows now are exceptionally long and full-flowered spikes of Gladiolus, probably the variety Shakespeare. The large flowers are white, with light stripes of carmine or rose color

at the base of the petals. Trailing Arbutus is also becoming quite abundant. The greater proportion of it now comes from North Carolina.

According to a correspondent of *The Gardeners' Chronicle*, the most interesting collection of Coleus ever made has been on exhibition this year at the Royal Botanic Garden, in Portici, Italy. The plants are of the most varied dimensions, from dwarf forms a foot high to the gigantic varieties six feet in height, with branches covering a circle ten feet in circumference and stems five inches in girth. The leaves of some of the plants are as much as eighteen inches long and thirteen inches wide, and they have broken into a wonderful variety of colors.

At the recent Fruit-Growers' meeting at Worcester, Massachusetts, complaint was made that the Japanese Plums were short-lived and not hardy, and that the cold this winter had killed all the fruit-buds and many of the limbs on some of the trees. To this it was replied by Mr. Hale that when these Plums were first sent out they were budded on Peach stocks, and this may be a reason for their lack of hardiness and their liability to disease. Nevertheless, it is not wise to plant these Plums very largely in central and northern New England until more thorough tests of their value have been made.

In a list of 106 varieties of Sweet Peas tested at the Cornell Experiment Station last year the few classified as "very good" are said to have some superlative merit—that is, they are better in some points than those which have attained the accepted standard of excellence in the modern improved Sweet Pea. The varieties in this list are these: Adonis, Apple-blossom, Blanche Ferry, Boreatton, Butterfly, Captain of the Blues, Cardinal Wolsey, Countess of Radnor, Duchess of Marlborough, Emily Henderson, Empress of India, Improved Painted Lady, Isa Eckford, Lemon Queen, Mrs. Gladstone, Tangier Scarlet.

The prices of California oranges have advanced somewhat with the greater scarcity of the West India fruit, and Navel oranges from the Pacific coast sell readily for $3.00 to $4.00 a box at wholesale, seedlings commanding $2.50 to $3.25. Jamaica oranges bring $9.00 to $10.00 a barrel, repacked, and the few now coming from Havana sell for $5.00 to $6.00 a barrel, in original packages. Of oranges from the Mediterranean, Catanias now bring $3.00 to $3.50 a box, and Valencias $4.75 to $6.00 a case. The stock of California Navel oranges, it is estimated, will be exhausted by about the middle of April. A small lot of Florida oranges which arrived here the latter part of last week sold for $5.00 to $6.00 a box.

In the new Hand List of Orchids, published at Kew, after some preparatory statement as to the modern practice of cultivating these plants, the writer adds that after all a considerable number of species submit to horticultural conditions with great reluctance. Among these are Cattleya citrina, Dendrobium Maccarthiæ and many species of Oncidium. That the proper method of cultivating these plants will be discovered in the future there is little doubt, since species which are generally difficult prove amenable to treatment in special cases, as, for example, Diacrium bicornutum is generally found intractable, and yet it is grown at Kew with little trouble, while it seems impossible to grow Disa grandiflora there with anything like the success attending its cultivation in Edinburgh and Chatsworth.

The Gardeners' Chronicle gives a picture of a new hybrid Rhododendron which has been raised at Veitches' Chelsea Nurseries and named Eos (The Dawn), perhaps because it is the forerunner of a new race of warm greenhouse Rhododendrons. It differs from the beautiful race obtained by crossing Rhododendron Javanicum upon R. jasminiflorum in the bright carmine and scarlet color of its flowers, as well as in their form, their profusion and their persistency, since they last from three to four weeks in perfection. The pollen parent is R. Malayanum, a species widely distributed over Malaysia. Besides the three species already named, the new hybrid has among its ancestors on the female side R. Lobbii. From the table of its pedigree given, it appears that besides the four species named, there are four hybrids among its progenitors, and since all these plants are in cultivation, an interesting opportunity is offered to trace the influence of each in the successive crossings.

A bulletin on Chrysanthemums from the Cornell Experiment Station is interesting, not so much from its choice of varieties among the older sorts or its test of novelties as it is for certain suggestions for reformation in classification, nomenclature and the like. Everybody agrees that no flower should receive a vulgar or a bombastic name, and the naming of plants after Mrs. Judge This or Field Marshal That should be discontinued. Particularly interesting is the study of variation in the forms of florets and some attempt to get rid of the confusion in catalogues about the way they are described. For example, it is important to know whether these florets of a given variety are ligulate or whether their margins are incurved, because single, intense, vivid colors are best displayed by a ligulate floret. In the variety Crimsona the general effect is red, but in Miss Helyett, which is of a similar shade, the margins are turned in so as to show the under side, and this produces a different effect altogether. There is an interesting discussion on problems of color, with notes about cultivation, and, altogether, the pamplet is a neat monograph, which, while it contains nothing that is new, will encourage observation and study on the part of growers and lovers of these flowers.

The efforts of Secretary Morton to stop the shameful waste of money in the distribution of seeds have been brought to naught by a joint resolution of Congress which directed him to go on, as in former years, and spend $150,000 for the purchase and distribution of seeds, bulbs, plants and cuttings through the various members of Congress. In accordance with this, Secretary Morton has sent out a circular to seedsmen, giving directions about putting up the seeds, which must be true to name and up to a certain standard of purity and germination, and free from smut, ergot, eggs and larvæ of insects, and seeds of certain specified weeds. The seeds will altogether weigh some 300 tons, and they are then to be divided among the members of the House and Senate into 450 separate packages. A few of the items are 1,300,000 packets of Lettuce, 130 packets to the pound; 1,200,000 packets of Radish, 60 packets to the pound; 1,040,000 packets of Beets, 400,000 packets of Cucumbers, 460,000 packets of Tomatoes, 320,000 packets of Garden Peas, 1,000,000 packets of flower seed of not less than seventy-five choice varieties, averaging 300 packets to the pound, with full cultural directions and description of growth to accompany each variety. The joint resolution became a law without the President's signature so late in March that it was not possible to undertake the dissemination of certain kinds of seed. The list selected includes such kinds only as could probably be purchased and distributed in time for planting throughout the country. With each item a percentage of purity and germination is given, and the seed will be tested by some employee of the Division of Botany in the Department of Agriculture, and Secretary Morton reserves the right to reject any lot which falls below the standard.

The cost of the seed is but an inconsiderable fraction of the cost of a vegetable garden, but the quality of the seed is a matter of too great importance to be neglected. It may look bright and plump and yet be worth little for planting. As a rule, our seedsmen are as particular as other tradesmen, but, after all, the planter is too often disappointed in his seed. In older countries legal restrictions have been thrown around this business, and in Germany alone there are forty seed-control stations, and many more in other European countries, and the quality of seed is said to have improved steadily since these stations were established. In order to obtain a clear idea of the actual condition of the garden seeds sold in Rhode Island, the Experiment Station of that state made some careful studies on the subject last year, and the report of the tests made appears in a bulletin just issued. A standard variety of each of thirteen common vegetables was selected and a sample of each was bought of nineteen different dealers in March last. The seed was generally clean and there was no indication that impurities had been intentionally introduced. In nearly two-thirds of the samples these impurities amounted to no more than one per cent. The seeds were then subjected to sprouting tests to ascertain their germinating power. In sixty-four out of 233 samples only five per cent. or less of dead seed was found, but in twenty-three others half of the seeds failed to germinate, and in twenty, three-fourths of the seeds were useless. This shows that some seeds are much better than others, and the buyer has no means of knowing the quality of the article he is getting, while the dealer who sells seeds of standard vitality and purity gets no advantage in price over his careless or conscienceless competitor who sells seed which is comparatively worthless. In several of our states the quality of commercial fertilizers is tested, and buyers now are more likely to secure the worth of their money in plant-food than they were before chemical manures were subject to inspection. Honest manufacturers, too, get the benefit of a state guarantee. It seems possible that some official guarantee of the quality of vegetable seeds could be devised which would protect the buyer and the careful seedsman in the same way.